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CHAPTER 18

GOLD MINING AND ECONOMIC AND SOCIAL CHANGE IN WEST AFRICA

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18.1 INTRODUCTION

THE history of gold mining in West Africa offers an important caveat to the aphorism that "geography is destiny." The aphorism has considerable appeal. Through much of history the economic opportunities available in a geographic region shaped the social infrastructure of people who inhabited the region. The institutions of those who lived by the sea differed from those who roamed the desert. The truism is sometimes validated in empirical analysis: strong correlation across societies of two variables, one geographic and the other social, is interpreted as evidence consistent with a casual story. Alesina, Giuliano, and Nunn (2013), thus, found that regions more adaptable to plow-based agriculture developed social institutions unfavorable to women. Fenske (2012) found that regions exhibiting more ecological diversity were more likely to develop complex proto-state institutions.

Research on historical and contemporary gold mining in West Africa, however, suggests a more nuanced story. The record suggests a variety of outcomes. There is also considerable room for mismeasurement of outcomes. The further back in time economic historians go, the more their stories, woven from sparse facts, become possibilities rather than certainties. Asante and Mali, the two West African empires that were central to political and economic dynamics in West Africa for centuries, may or may not have flourished because of gold. Given the highly unreliable statistics of contemporary West Africa, even in the present there may be much disagreement over basic facts. Mali, Ghana and Burkina Faso, West Africa's leading gold exporters in the 2000–2013 period, may or may not be subject to the "resource curse." Even at the local level, in both past and present, there has been little consensus about how to characterize social institutions in mining regions. The crucible of gold mining has not, apparently, been poured into a standard mold in which economies and societies were cast.

Gold mining in West Africa may be examined by considering two paradoxes. Regions with gold mines may have given rise to stronger and more complex state structures, while gold mining also gave rise to incentives for rent-seeking, conflict, and undermining of state structures. The revenues from taxation of gold mining were likely the primary mechanism for these effects. But another mechanism may have operated. Gold extraction and trade had to be organized through relatively complex social institutions. At the same time, participation in more complex social institutions changed interpersonal relationships and identities. In short, gold mining created manifold local economic and social changes that rippled through the broader economy and society. The nature of these changes and the extent of their impact on broader society, however, remain largely speculative.

The chapter proceeds as follows. Section 2 summarizes relevant research on the magnitudes of the gold mining sectors in West Africa from medieval times to the present. Section 3 discusses the presumption that gold mining was directly implicated in early state formation in medieval times, and strengthened states in subsequent centuries. Section 4 reviews arguments and evidence about how gold mining undermined state functioning. Section 5 briefly reviews work on the social impact of mining. Section 6 concludes by sketching a broad theory of the place of gold mining in West Africa, while noting the severe limitations in the body of evidence available to evaluate the broad theory.

18.2 Gold Mining in West Africa

At various points in the economic history of West Africa, gold mining was quite extensive and valuable, and therefore might have influenced social and economic institutions. Unfortunately, the historical and even contemporary record remains quite unsatisfactory. Historians have pieced together limited time-series of gold production levels for various gold producing areas. Even more uncertain are trends in the value of gold extracted in terms of purchasing power, the population involved in gold production, the forms of organization of production and trade, and the ties of gold-producing regions to state-like political formations. This economic history may be conveniently divided into five periods: (i) the medieval period, when gold from West Africa was a major source of bullion for the growing societies of the Mediterranean and Islamic world; (ii) the period 1700–1850, when bullion exports from the New World, and shifting of commercial interests to the Atlantic slave trade, appear to have discouraged creation of recorded knowledge of gold mining in West Africa, either because all trade in gold became internal to West Africa and hence was a strictly oral affair, or because production levels fell dramatically so there was nothing worth recording; (iii) the late-1800s, when industrial mining techniques were introduced by European entrepreneurs; (iv) the colonial period proper, when colonial administrators organized and regulated gold extraction; and (v) the post-independence period, including especially the mining boom of the 2000s.

Before discussing the magnitude of the gold sector in each period, a digression on production techniques is in order. Gold ore has been excavated in several forms in West Africa. First are alluvial deposits of fairly concentrated gold that is embedded in rock. This gold is extracted by panning the shores of rivers, as the gold-bearing rocks are carried downstream after seasonal rains. Dried up river-beds are also mined for these alluvial deposits. Second are relatively shallow deposits of quartz-bearing rock permeated with gold particles. This gold was extracted through tedious manual digging of pits, crushing of ore, admixture with mercury solutions, panning in water, and heating, concentration, and finally extraction. Since the early 1900s, open-pit mining using explosives, earth-movers, and industrial crushing of ore and industrial-scale leaching has been deployed. Artisanal gold mining persists, however, because of the large capital expenditures involved in industrial mining and consequent risk. Finally, gold may be extracted in deep shaft mines, such as those common in South Africa. West Africa has seen few deep shaft mines. One is the Obuasi Gold Mine in Ghana owned by AngloGold Asante. Given relatively limited mining exploration in the region, there remain possibilities for large strikes deep underground.

Gold in West Africa through the medieval era to the present has come from only a handful of regions, mostly located in a geological zone known as the Birimian greenstone belt. There have been open-pit, alluvial mines in Bambouk (also known as Bambuhu) near the Falamé and Senegal rivers near the town of Kayes, and Bouré, close to the present-day Guinea–Mali border near the town of Siguiri. These are the same regions where industrial and artisanal mining boomed in the 2000s in Mali. The Akan or Asante goldfields became known to early fifteenth-century Portuguese explorers, whose appellation for their first trading post and later castle, Elmina, referred to the mines. The region around the Tarkwa region to the west of Accra in the late 1800s developed large industrial mines. Goldfields in the Lobi area of south-western Burkina Faso near the border with Ghana may also have been significant in the medieval era. Since the rise in gold prices in the early 2000s, new geological exploration techniques have led to the discovery of numerous mining sites scattered throughout Burkina Faso, Cote d'Ivoire, Ghana, Guinea, and Mali.

18.2.1 Medieval period (1300–1700)

The largest sources of gold in West Africa over the 1000–1700 period were Bambouk, Bouré, and Akan (Gautier 1935; Malowist 1970). Estimates of the magnitudes of gold extracted and exported from these three regions in medieval and pre-colonial times are unreliable, given the paucity of documentary records. Moreover, units of measure varied across the different gold-trading posts on the trans-Saharan route.

Bambouk and Bouré were taxed and controlled (to some degree) by the medieval empire of Mali centered, for much of the period, in Nyeni (or Niani). Curtin (1983) suggested that a figure of one ton per year exported across the Sahara was a reasonable educated guess for the magnitude of exports. Numerous anecdotes in the historical record can be triangulated to generate this approximate figure. Bambouk and Bouré were the sources, for example, of Mansa Musa's apparently astonishing pilgrimage to Mecca in 1324, where he transported so much gold that the price on Cairo markets dropped markedly for years afterwards. Numismatic analysis of coins put into circulation in the Mediterranean world suggest that much of the gold currency of North Africa had its origin in African gold rather than central European gold (Messier 1974). Bambouk and Bouré gold transported via trans-Saharan trade was clearly important in the monetization of the Mediterranean basin, and the development of the Arab and Berber dynasties in the Maghreb region.

The Akan or Asante goldfields appear to have been of similar capacity as Bambouk and Bouré. Curtin (1983) proposed that the first 100 years of the Portuguese monopoly over gold trading on the Atlantic side of West Africa, from 1500 to 1600, generated approximately half a ton per year of gold exports.

Several authors have estimated that productivity from both the Mali and Asante gold fields was about one gram of gold per day per worker. There are about 28 grams in an ounce, so a person might have extracted an ounce each month. Thus one person extracted about six ounces during the six-month dry season when the alluvial fields could be worked. In order to have had a production level of approximately 30 000 ounces (one ton), there would have had to have been approximately 5000 people working as active miners. If their households averaged five persons and the wife and children "supported" the miners (by growing food, trading, providing services, and other activities) then about 25 000 persons would have been involved in each of the major gold fields. This would have been quite high population density by medieval standards.

Some more arithmetic offers rough estimates of the value of taxing or controlling the gold extraction sites. Law (1991) reports that on the slave coast of West Africa around 1690 about 1000 cowries traded for an *acky*, a sixteenth of an ounce of gold, and that 50 cowries was roughly consonant with subsistence expenditure (purchasing, for example, one chicken). In other words, an ounce of gold could purchase one more than a year's subsistence. If total extraction was on the order of 30 000 ounces, the entity controlling the gold might then have had purchasing power equivalent to providing subsistence to 30 000 people. Subtracting the subsistence for half a year of the 25 000 people involved in the mining, that would still leave capital to remunerate at basic levels the services of approximately 17 500 persons. That is, control over a major gold site enabled a ruler to fund a well-sized army (with its many retainers), by pre-colonial West African standards.

18.2.2 Rise of the slave trade and New World bullion, 1700–1850

Little is known of gold exports via the trans-Saharan routes for the 1700–1850 period. For the Asante goldfields, Curtin (1983) estimated that during the period from 1700 through 1850 gold production and export was likely on the order of one ton per year. As the slave trade expanded and bullion increasingly was exported from the New World, records on trade in gold become increasingly scarce. Historians have been engaged in a lively controversy over the relative magnitudes of the value of the gold (and commodities more broadly) and slaves (Bean 1974; Eltis and Jennings 1988; Van Den Boogaart 1992). Given the controversy, perhaps the safe conclusion to draw is that slave and gold exports were of the same order of magnitude in value until the early 1800s when the slave trade was gradually abolished.

18.2.3 The late-1800s

Dumett (1998) remains one of the major sources for the Asante goldfields in the 1800s before colonial occupation. He found that relative to investments then taking place in the Americas the investments in Tawku (Tarkwa) in Ghana were quite modest, and that local African entrepreneurs were often major figures in mining activity. Indeed, it appeared likely that African mining entrepreneurs were more successful than European ventures. The European ventures were overwhelming failures, and Dumett suggests that many of the backers of mining ventures were motivated by their ability to float shares in London and then loot the mining company. Despite their financial problems, Dumett argued that local and expatriate mining concessions in Tawku were not merely enclaves, with few ripples on local economic and political landscapes, but were rather quite significant in late nineteenth-century transformations. In particular, he suggested that land tenure formalization and individualization in the region may have been more related to gold mining than cocoa.

Other, apparently smaller, gold fields were known from pre-colonial times, but evidence on production has remained scarce. Kiethega (1983) argued that the gold mines of Poura in what is now south-western Burkina Faso were worked during late 1700s and through the mid-1800s. Output was relatively low: "At its height, the Poura industry may have produced between 5 and 50 kg of gold annually." Perinbam (1988) reviewed gold mining in the Lobi fields near the present-day Burkina Faso–Ghana border. There appears to be little evidence on the magnitudes of gold extracted, since trade was handled by a diaspora of Dioula merchants. Presumably, the lack of evidence indicates that production levels were low.

18.2.4 Colonial gold policy

Military leaders, civilian administrators, and especially commercial interests of France and Britain were optimistic in their early assessments of how much gold there was in West Africa (Macdonald 1902). The British conquest of the Akan empire was accompanied by significant looting of gold wealth and also demands for reparations by the victors in the form of gold. The subsequent transfers were significant.

Commercial gold production was limited in the Bambouk and Bouré areas, while extensive in the Akan region (Brunschwig 1975). A French company, Compagnie des Mines d'Or du Bouré-Siéké et de l'Afrique Occidentale Française, issued shares in France in 1907, only a decade after the full conquest of the region. Yet it became clear even in the very beginning of the colonial period that the security, relative to earlier decades, of colonial rule raised the opportunity cost of labor. Local farmers and migrant labor had better opportunities, and commercial mining enterprises were unprofitable. As Curtin (1973) noted, "By a curious paradox, then, Bambuhu came to have a reputation for great wealth because it produced gold, but it produced gold because it was too poor to do anything else." Once people in the area had other more lucrative opportunities for work, gold mining through artisanal methods was no longer profitable. Moreover, the infrastructure (roads and railroads, skilled technicians, and spare parts resupply) for industrial mining was absent.

Gold production apparently halted in Upper Volta during the colonial period. Moussa (1995) argued that the pre-colonial mining areas of Poura and Gaoua never expanded beyond their production levels of (together) perhaps 100 kg per year. In Gaoua attempts to regulate and improve artisanal mining were eventually abandoned. In Poura an industrial mine was established in mid-1930s. But the mine appears not to have been profitable given the low ratio of gold in the ore, difficulties in obtaining spare parts, and relatively high wages for seasonal labor. In the artisanal sector, the French colonial administration pursued policies that were intended to extend colonial control and manage economic affairs, but had the result of stifling economic activity. The government established a purchasing monopoly on gold. Merchants had to obtain a formal license (*patente*) to purchase gold from miners, and the government fixed the price of gold. The interventions led, apparently, to even lower prices offered to gold miners, who quickly abandoned the arduous work.

In the Gold Coast, the colonial administration eventually undertook significant infrastructure investments to make the Tawku ridge accessible, and industrial mines became well established. Gold production in Ghana in the early 1930s, just before the Depression, was substantial: on the order of 250 000 ounces in 1930 to 700 000 ounces in 1939, which at real price of gold of US$500 per ounce would be $125–$350 million per year (United Kingdom 1936, and other volumes). The gold exported was approximately 20% of the value of all exports from the colony.

18.2.5 Post-independence period

Gold mining policies in post-independence West Africa exemplify generally bad policy choices that undermined economic development across all sectors of post-independence economies. Newly independent authorities that might have used gold revenues to secure political power failed to invest in technology and organizational reform, and so gold mining in West Africa was largely unprofitable and production declined dramatically. Mali and Ghana were both beset by political instability and military coups d'état. Attempts by successive regimes to revive their gold sectors through state-led development ended in repeated failure. The state-owned Poura mine in Upper Volta (and then Burkina Faso) was closed in the mid-1990s.

In the 1980s, influence over economic policymaking shifted to the World Bank, as regimes depended on structural adjustment lending to ensure urban acquiescence to rule (by propping up civil servant hiring and salaries, and subsidizing essential urban commodities such as bread and petrol). The World Bank pushed for liberalization of the mining sector for West Africa. Most countries adopted new mining codes that were favorable to mining companies, with royalty rates around 3% and generous relief from taxation for the initial years of production.

As a result of the reforms, industrial mining was reinvigorated in a number of countries. One country that experienced an early reindustrialization was Guinea in the mid-1990s, particularly in Siguiri (the site of the medieval gold site of Bouré). By the late 2000s, four companies had made significant investments: AngloGold Asante, Societe Miniere de Dinguiraye, Kenon, and Golden Rule Limited. The mines started producing 10–20 tons per year. Mali likewise saw significant mining investment. In Ghana, mines reopened and several new mines were established.

The remarkable quintupling of the world price of gold from US$350 an ounce in 2000 to above $1500 an ounce in 2012 spurred significant exploration and then investment. In Burkina Faso, for example, eight industrial mines opened by the end of the 2000s, and production reached 30 tons per year in 2012. Production in Ghana exceeded 80 tons in 2011. Gold mining became one of the largest single sources of government revenue for Mali, Burkina Faso, and Ghana, surpassing revenue from cotton production and other agricultural activities. Artisanal mining activities in the 2000s boomed and in many countries it has involved hundreds of thousands of people, many of whom had migrated away from their home villages. Young children have been extensively involved (Thorsen 2012).

18.3 Gold Mining and State Formation

A common understanding of state formation in the pre-modern era is to suppose that state structures emerged with social differentiation (Boix 2010). By differentiation is usually meant the process by which specialization and division of labor enable people to pursue different trades, and accumulate greater wealth. Positive and negative implications of differentiation favored state formation. On the positive side, differentiation implied greater returns to specialization and trade. A more complex trading economy benefitted from contract enforcement, a public good. On the negative side, organized looting increasingly became an enduring strategy for some social groups. The attractiveness of looting may have been due to technological innovations: effective offensive raiding may have improved; wealth available to be looted may have increased; stationarity and identification of wealth may have increased as fixed capital became more important in production (Mayshar, Moav, and Neeman 2011). State formation then emerged as an equilibrium from the interaction of offensive groups and defensive groups, and from groups mutually benefitting from contract enforcement. Indeed, encouraging groups to refrain from looting and abstain from cheating may be seen as similar prisoner dilemma-type social problems. Lineage groups presumably evaluated the advantages of a larger and more hierarchical armed force and dispute resolution mechanism. The evaluation presumably was akin to a choice over loyalty or exit. Africanist historians have been clear that in West Africa rulers competed for followers, rather than territory. Members of lineage groups were choosing to be loyal to an established polity. Over time, loyalty was institutionalized into a broader naturalization: the kingdom, sultanate or state came to occupy a legitimate and tolerated position at the top of the social order.

The more homogenous a region, the fewer incentives for raiding and fewer gains from trade, and consequently less need for defense and judiciary, and so the less likely a state would emerge. Early states may have been more like clubs that organized trade or raiding, and the provision of generalized security, justice, and exaltation of the divine—the ideologies of states—were emergent properties of the growing complexity of organized violence.

This common sense theorizing suggests that local potentates who controlled goldfields or gold trade routes may have leveraged resources to expand territory and influence while increasing the complexity and depth of political hierarchy. Thus the early rulers of the Bambouk and Bouré goldfields may have been able to expand and sustain their control over large swathes of West Africa. It is taken as a commonplace that the early kingdoms of Adanse, Denkyira, and Asante arose because of gold (Ofosu-Mensah 2010). Girard (1992) argued, likewise, that trade routes delivering Bambouk gold to seaports in Senegal were a key factor in the rise of the small state of Cantor that eventually became the Mali empire's province of Kaabu and later became an independent kingdom from 1500 to 1800.

There are reasons to doubt the centrality of gold mining in state formation. First, the correlation of gold mining in Bambouk, Bouré, and Akan and early state formation may be entirely spurious. Other forces such as the slave trade and the commercialization of the Atlantic coast were at work. For example, there was considerable potential wealth from exporting commodities through the Saharan trade routes (salt and slaves) and the new Atlantic trade routes opened by the Portuguese in the early 1500s. The concomitant urbanization around new Atlantic ports may have induced more centralized polities (Daaku 1970). In Sahelian West Africa Islamic-oriented jihads were emblematic of patterns of offensive and defensive warfare that may have eventually and indirectly given rise to state formations as in Europe (Tilly 1992). Finally, especially for Asante, the flood of technological innovations from the Atlantic trade (including new currencies, guns, new ships, and crops) was likely to have influenced incentives for state centralization.

For the medieval period, gold extraction may have contributed to state formation indirectly, through a mechanism quite different from state control of revenues and economic differentiation from growing wealth. Gold extraction during the medieval period enabled larger-scale trade with Europe, the Middle East, and India. One perhaps unanticipated byproduct of gold exports was the ability to import cowries on a much larger scale. The subsequent spread of cowrie as low denomination currency possibly enabled the inland areas of the Niger bend to develop much more than they would have in the absence of widespread currency. Currency permitted specialization. Monetization of economies through large-scale circulation of coinage may have been an important component of economic growth. Monetization enabled longer-distance trade, greater specialization (as craftsmen were less constrained by the double-coincidence of wants problem), and development of credit instruments that facilitated investment (because a standard unit of value was available). Currency fostered growth that eventually led to a state, rather than the state fostering growth and eventually establishing a currency.

Second, there is little evidence about how the apparent decline of gold extraction and exports in West Africa, and decline in the relative value of gold after the expansion of bullion production in the New World, affected state formation and dissolution. In the sense, it is not clear how well the theory works "out of sample" as it were. Historical narratives that rely on causality going from the growth of gold to state formation eschew due consideration of the flip side. The gold sector experienced rapid and enduring declines. The discovery of bullion resources in the Americas, especially silver, made the extraction of gold in West Africa practically unprofitable, and gold mining apparently declined precipitously in Mali after the 1600s. If growth led to state formation, did decline not lead to state dissolution? The question has been relatively unexplored. Indeed, an unfortunate trend in recent economic history has been to compress the pre-colonial past of Africa into a single snapshot used to explain the present, with little attention to variation in the past (Austin 2008).

Examination of the local-level issues of gold mining casts further doubt on the commonsense notion that mining may have given rise to robust states. Historical and anthropological accounts suggest that different ethnic groups located in the regions of gold mines had very different responses to the new opportunity. Werthmann (2003), for example, reviewed how in southwestern Burkina Dagara and some other ethnic groups viewed the earnings form gold as "bitter money." Indeed, the appellation has broad echoes to other societies, not just in Africa. Some ethnic groups have shared powerful aversions to certain forms of wealth creation (Luning 2009). Gold mining, associated by Dagara with the earth and ancestors, was viewed as uncontrollably polluting of self and society. Other ethnic groups came, then, to occupy the space of opportunity created. The path from ethnic appropriation of wealth to strengthening of ethnic institutions, to eventually negotiating and challenging state structures, was conditioned importantly by initial cultural understanding. The geography of gold, it turned out, may have mattered more for certain ethnic groups than for others.

18.4 Gold Mining and State Functioning

The "resource curse" literature argues that rapid mineral extraction opportunities in weak states would make more difficult the inclination to solidify state legitimacy and hence effective projection of power. The literature appeared to be confirmed by robust negative correlations between the share of natural resources in exports and levels and growth of GDP per capita. The hypotheses were numerous, ranging from political economy to the macroeconomics of the Dutch Disease (Mehlum, Moene, and Torvik 2006; Robinson, Torvik, and Verdier 2006; Ross 1999). Mineral rents were supposed to have induced violent contestation over control of the state. Rents may have perversely affected incentives in the broader economy, leading to longer-term stagnation. Rents may have undermined processes leading to inclusive governance. Moreover, a negative feedback mechanism may have operated, so that rent-dependent polities structured incentives towards more extraction and away from investment, especially investment in public goods. Skeptics have argued that there is no general resource curse and that models tend to assume their conclusion (Brunnschweiler and Bulte 2008). Thus if resources are assumed to induce corruption rather than enable control of corruption, it is not surprising that models generate the result that more resources cause more corruption.

While gold may have been at the origin of state formation in West Africa, it may also have been responsible for the persistence of ineffective provision of the public goods critical for development. There is little evidence on how gold revenues may have undermined governance in pre-colonial states. The argument is sometimes made, though, that the "curse" of gold was what weakened Denkyira, initially the more powerful protostate of the region, enabling the eventual Asante conquest of 1701 (McCaskie 2007).

There is also little consensus on whether the explosion of gold mining in West Africa over the 1995–2013 period has been associated with a resource curse. West Africa in general has been since independence characterized by weak states and weak modern civil society institutions. The weak national state emerged from colonial rule, mutated into the one-party state of the 1960s, and has evolved into myriad semi-authoritarian democracies with opaque and contestable political "rules of the game." Comparatively strong traditional and religious institutions, on the other hand, have largely accommodated themselves to remain outside or interact informally with state structures. With the exception of Casamance, and more recently of the Tuareg rebellion in northern Mali, there have been no significant separatist movements, despite the multi-ethnic character of most countries.

In this environment, gold mining revenues might generate considerable instability. Actors prompted by a voracity effect to reopen foundational bargaining over allocation of power risk an extended interregnum. It is tempting to think, for example, that the resurgence of gold mining in Mali during the 2000s may have played an important role in the disintegration of the central Malian state. Mining revenues had become the single largest source of revenue for the Malian state (on the order of US$500 million per year). In March 2012, President Amadou Toumani Touré and much of the political class abandoned the political "field" when a small unit in the military took control of the Presidential Palace in Koulouba. The interregnum that followed only ended through international intervention, creating a de facto protectorate. While this is a tempting story to tell, there is little evidentiary basis for it given the scarcity of in-depth research on nexus of gold mining and governance in West Africa in the 2000s. It does appear, however, that Guinea has had a similar prolonged interregnum as foundational constitutional bargains are renegotiated. Both countries' central states have less legitimacy and less capacity than in the late 1990s. Ghana and Burkina Faso, on the other hand, appear to have had state legitimacy and capacity strengthened by the boom.

Why has gold mining not strengthened modern civil society and thus generated a reinforcement of counterweight to the state? In all four gold-mining states, the challenge from and response by organized modern civil society has been minimal. The experience of transparency initiatives supported by the World Bank and other donors has been similar in all countries. The discourses civil society organizations evoke and advocate for are heavily conditioned by the semi-authoritarian regimes. Civil society organizations emphasize prostitution, environmental damage, and mine labor relations, and devote little effort to tracking the hundreds of millions of US dollars of revenue generated by mining operations. Organizations such as Revenue Watch and Publish What You Pay have had little impact, and when Extractive Industries Transparency Initiative (EITI) reports are published there are brief mentions in the press but otherwise little genuine public debate emerges. During the interregnums there is relatively little evidence that organized civil society regards the mining sector as a central lever for political transformation.

18.5 Local Social Change

There have been more hopeful analysts suggesting that the mining sector might engender a more vibrant civil society at the local level. Bryceson and Fisher (2014) noted the "democratizing tendencies" of artisanal mining. Their analysis, based on extensive fieldwork and surveys of Tanzanian artisanal miners, is likely generalizable to West Africa. They argued that the sharp rise in incomes from mining had enabled hundreds of thousands of relatively young men and women to become more civically engaged than they would have had they remained in their villages. Migration to mining areas likewise removed this same population from the gerontocratic and authoritarian structures of village life, into a more complex, and often more free and participatory, social structure of the mining camp. Finally, mining camps often celebrated individuality and responsibility in ways that contrasted sharply with traditional social norms. Perhaps democratic participation would benefit from a greater sense of identity as an individual in society. Artisanal mining centers have become complex communities of young people, loosely subject to existing local social institutions, but more often creating idiosyncratic new social institutions.

Not all social change has to wait for the young generation of mining workers to become civically engaged. Dell (2013) and Arnaldi di Balme and Lanzano (2013) offered detailed studies of the actual institutions of local governance that have emerged in artisanal mining areas in Mali and Burkina Faso, respectively. The weak national state had left the field of local politics open to political entrepreneurs, who proffered a range of state-like functions (from dispute resolution, to security, to insurance). The democratizing tendency of greater local governance may, however, turn into a tendency to place loyalty to local authority above loyalty to the national state; with concomitant danger of rapid descent into warlordism should the central state collapse (Reno 1997; Vinci 2007).

Certainly gold mining is shaping social relations in ways that must be of similar magnitude to the transformations brought about by extensive service in the colonial military. The retired *tirailleurs* and other servicemen brought transformed local politics, according to many accounts (Lawler 1990).

There has been relatively little research, however, on these significant social changes. Anthropologists have noted other changes in, among other things, gender relations, social norms regarding wealth and consumption, aspirations for the future, participation in local and national civic life, and the willingness to undertake risks and invest for the future (Grätz 2009; Werthmann 2008). Quantitative evidence on broad social change is scarcer. In a significant first approach, Kotsadam and Tolonen (2013) examined the incidence of female wage work in communities located near mining areas. Using a comprehensive listing of all mining sites in Africa, they mapped the locations of mines opened or closed since 1975 onto communities surveyed in Demographic and Health Surveys. They used a difference-in-difference estimation strategy to show that changes in mines affected proximate communities, compared with communities further away, before and after the opening or closing of the mine. Women were more likely to report wage employment and less likely to be working in the household.

Whether, and how, these community changes will have systemic effects on broader social trends remains difficult to discern. Moreover, there is a tendency to use representations of social change in discourses concerning mining. An old trope, for example, is that artisanal (and even industrial) mining communities are places where promiscuous sexuality and prostitution are prevalent (Werthmann 2009). This moralizing characterization appears to have been deployed when national elites sense that their control over mining might be jeopardized by nascent local involvement in mining jurisdictions. Thus, the social change itself becomes part of discursive strategies that undermine nascent movement to challenge established orders.

18.6 Conclusion

A comprehensive, empirically grounded history of gold mining in West Africa would trace how the economic and social ripples emanating from the local level affect the complex, state-level tension between the impetus and possibility of greater state efficacy as mining revenues grow, with the weakening of central institutions as opportunities for rent-seeking and rebellion improve. Such a narrative would go beyond a simply theory of oscillation, where gold discoveries, high gold prices, and improvements in extraction technology lead to rents, and the rents enable temporary accumulation, but that accumulation leads to a voracity effects that undermines prosperity and institutional stability (Tornell and Lane 1999).

A more micro-sociological account would emphasize how highly contingent initial conditions shape the effects of gold mining. It would trace through the effects of gold mining on nascent social movements and transformations. Then these local emergent changes would be integrated into a larger-scale national and international model of political and economic outcomes.

Such a narrative remains to be written. As scholars continue to uncover new sources and especially new methods of analysis, it is worth recalling that good unifying narratives of economic change (or lack thereof) should not see the historical process in straightforward terms. Instead, historical understanding is of contingent hesitations, with much variation and nuance, characterized by modesty given difficulties in falsifying grand narratives. Moreover, it is worth recalling that a standard critique of statistical confirmation of grand narratives is that they often are influenced by a version of positive significance bias (Austin 2008). That is, contingent patterns that have emerged from data are elevated to status of grand narrative, despite a lack of true statistical significance (because the data have been "mined"), robustness (because checks on alternative specifications and data stop after a handful confirm the initial result), and external validity (because in history the problem addressed is often unique to a region or epoch). These appeals to virtue are an indirect way of concluding: perhaps social scientists and historian will never know the contours of the mold into which gold was cast.

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